

# The Forester.

VOL. IV.

NOVEMBER, 1898.

NO. 11.

## PUBLISHER'S ANNOUNCEMENT.

THE FORESTER is published monthly by the American Forestry Association at

No. 45 Wyatt Building, Washington, D. C., where all communications should be addressed. The subscription price is One Dollar a year, and single copies are sold at ten cents. Make all checks, drafts, etc., payable to THE FORESTER.

## CONTENTS.

- Page 219. The American Forestry Association Meeting at Omaha.
- " 227. The Relation Between Forestry and Experiment Stations and Agricultural Colleges. -  
*S. M. Emory.*
- " 231. Forestry vs. Tree-Planting.  
*B. E. Fernow.*
- " 232. The Axe and the Accident.  
*J. B. Thoburn.*

The New York College of Forestry has started under good auspices as far as number of students is concerned. There are now between 30 and 35 students taking advantage of its existence. Of these only two are regularly inscribed as students of the college, one freshman and one junior; but there are at least eight others, students of the College of Agriculture, who take the junior courses and propose after graduation from the College of Agriculture to change over to the College of Forestry and secure promotion from that college. This arrangement is due to the fact that the College of Agriculture charges no fees while the College of Forestry charges a regular admission. In addition to these students intending to take up the study of forestry, professionally, there are two other classes, one made up of sophomores in Engineering courses studying Timber Physics with Professor Roth, and another, mostly students of Political Economy, taking the synoptical course given by Professor Fernow.

## The American Forestry Association Meeting at Omaha.

The American Forestry Association held a meeting in the Board of Trade rooms, Omaha, September 9 and 10. The first session was called to order at 2.20 on Friday, September 9. There were present Hon. R. W. Furnas, Hon. J. Sterling Morton, Mr. E. D. Wheeler, S. M. Knox, Prof. Lawrence Bruner, F. H. Newell, Dr. George L. Miller, Messrs. E. F. Stephens, S. M. Emory, Henry Michelsen, William T. Little, M. Dunham, and Mr. Adams.

Hon. R. W. Furnas was chosen Chairman and F. H. Newell Secretary of the meeting.

MR. NEWELL: "We were anxious to hold a meeting in the West, especially at the time of the Omaha Exposition, and the Nebraska people were also desirous that we should, but there seemed to be many insuperable obstacles. Many of our officers could not come to Omaha at about this time. Many of them are active men who are compelled to be in the forest at this part of the season, and therefore we tried by correspondence to put the burden of the meeting upon some of our Western members and friends. We first tried Governor Morton, and he stated he would be glad to act, but felt that his friend, Governor Furnas, was the one man who could do it properly, and Governor Furnas, I think, said that Professor Bessey was the proper person. Professor Bessey said that Professor Taylor was by all odds the man who could and should do it. Professor Taylor could not get out of it very well, as the time had grown short, and so he very kindly took it, but he has been very busy and has not been able to give as much time to it as he would wish to, and asked me to express his

regrets that he has not been able to personally attend to the details.

"The summer meeting is more of the nature of a meeting for becoming acquainted, for seeing the country and presenting papers. At the Annual Meeting very few papers are presented, and we depend largely upon the summer meeting to get the material for publication. There were proposed three meetings—one in New England, devoted to the forestry of the East; one in Omaha, which should be devoted to tree-planting on the plains, and one in California, devoted to the public forests. The New England meeting was held in Boston in connection with the Association for the Advancement of Science and was quite successful, as a large number of members were brought together. This is the second here in Omaha, and the third in California has been definitely abandoned, owing to the extreme drouth there, and we are not willing to try to induce Eastern friends to come there, as everything is burned up. The drouth is the worst probably known in the memory of living men. At the same time, although our attendance is numerically small it is exceedingly select, and we need not be discouraged, because we have the gathered experience here of another year."

(Here he read the call for the meeting as gotten out by Professor Taylor.)

"This plan has been carried out as far as Professor Taylor could do it and, for my own part, I have been in the West and had abandoned all hopes of being here, having been out on one of the Indian reservations. I offer that as an excuse for my lack of definite knowledge."

GOVERNOR FURNAS: "The first subject is 'Where Does Our Timber Come From?' and I will take the privilege of calling upon Mr. Emory to lead."

MR. EMORY: "This takes me decidedly at a disadvantage. I can tell you where the timber is going to, and that is the matter which concerns us most, so far as our institution is concerned. I can speak for our own State. We are self-supporting in that State (Montana), perhaps with the exception

of finishing lumber and hardwood lumber suitable for flooring. A great deal of interest is now being manifested in the matter of finishing lumber in the Tamarack timber which is found on the western slopes of the main range, a very few scattering trees being found of that variety on another location within our State. This supply is very abundant and of very superior quality, and possesses in a remarkable degree the ability to hold together in what is perhaps the most trying climate in the United States. We find that it is extremely necessary in Montana to depart from the usual known rules of putting together furniture, a very prominent instance of which came under my observation in the last year. I will never forget the way in which our professor of mechanical engineering and shop work erected all our buildings. He is an old Montanian of many years' experience, and when the question was asked him who was responsible for the finishing of the desks in our mechanical building in the manner that is so often done in a way to prevent the warping, he said that not a piece of the material handled in that fashion stayed. We have there to consider the very best material that we can get that is going to be used in the finishings of houses or furniture or anything of that nature, and we have great hopes in this Tamarack on this account. I saw a very elegant bank counter that had been cut from the log and kiln dried; it was of Tamarack material and had stayed since 1890. This was in '98. It showed no marks of the trouble of shrinking. In this Tamarack timber we have very great hope. Then we have a very fair quality of what I suppose in Minnesota would be termed Norway Pine. It is very similar to this which I see here.

"The Tamarack is growing at about 2,800 feet, but in the valley and well up on the mountain slopes as well. It is very fine timber and many trees run from two and one-half to three feet in diameter. These two trees are going to give us flooring, furniture material and finishing lumber.

"Then for the construction of houses we have there what is known as the Yellow Pine, and this is often found sixty feet in length and eighteen inches in diameter, absolutely clear and free from anything in the line of knots. All of this lumber is found on the Pacific slope, and the Yellow Pine of which I spoke is our principal dependence for that class of work; and we get, of course, in this clear lumber much material that costs about twenty-two to thirty-two dollars per thousand, but on the ordinary dimension lumber we probably get the benefit of as cheap prices, especially on that slope, as is to be found in the United States. It is not an unknown thing to find lumber selling for six to eight dollars per thousand—not, of course, the very best quality, but dimension lumber 24x48 and 12, such as the farmer would ordinarily use in the construction of farm buildings. On our slope of the mountain (Bozeman) we do not find quite as good quality as the lumber found on the west slope of the mountains. There is a great variety. We have a great deal of Lodgepole Pine. It seems to be the Pine which is occupying the ground following fires. We have had a great deal of difficulty and suffered great loss from campers and irresponsible people, and whereas fairly good lumber has been destroyed by the fires, these grounds are occupied very extensively by the Lodgepole Pine, the worst evil of which is that it is brushy and does not get to be of sufficient size to make really first-class material.

"We have a good deal of Red Fir and we have a few Yellow Pine and a great deal of Spruce. For fencing we have very fine Red Cedar. Our farmers are using nothing but Red Cedar for fencing, as it is very durable. The ruling price is about \$15.00 per thousand for Red Cedar fence posts.

"The Washington Cedar we find to be very brushy and something that is not at all lasting in the ground. It is a lumber that is not good for fencing. I would not pay freight on the Washington Cedar for fence posts.

"We find one very peculiar condition on the eastern slopes with reference to the knots in timber. It is almost impossible to get clear timber. In small timber the knots are tight and it makes first-class flooring, except that the knots do not wear down along with the main part of the board, leaving it rough; but for siding, if it is well nailed, it makes a first-class building material. We encourage as far as we can among the farmers the use of native timber just as it is found for ordinary farm use. All our buildings are made of Pine logs. We take the bark off before bugs or borers get to work inside the bark and cut the log to pieces. By cutting the logs in June and July the logs can be peeled very easily. The main body of the house consists of a good foundation of stone, and upon this 2 x 8, and at proper intervals we stand 6 x 6. These run from five to seven feet apart. The logs are then cut to fit these openings very tightly, and the result is really a filling of log, earth and plaster on the inside from ceiling to floor, and we are never troubled with settling of the logs. There are more farm improvements in our county than I saw in the 1,500 miles which I went over this month.

"I wish I had known, Mr. President, that I was expected to open this topic. I thank you for this opportunity. We are greatly interested in the forest preserve and the stopping of ruthless destruction of timber. The principal objection I have to their use of this timber in the manner that they do is the waste following of what we might term first-class saw material. They are not working up the refuse into timber. A large per cent could be used for that, and I think the rest should be used for firewood, and the tops and brush should not be left; and I see no righteousness in one man, because he has the means to do it, being permitted to cut more than his share of timber, while his neighbor may not be permitted to use it. I think the Government policy of restriction is just what we have needed for many years. We had one paper that dared raise its

voice against that policy, and it was extremely obnoxious. When these reserves were first created it was as much as a man's life was worth to endorse it. They carried the impression that the Government's policy was to permit no timber to be cut, to permit no prospecting to go on, and to make a sealed book of those mountains of timber. That feeling, I am happy to say, is disappearing very rapidly, and our best people are heartily in sympathy with the work, and they find there is no bar to the use of timber for mining, or taking ripe timber, or for using the mountains for any purpose except grazing sheep."

DR. GEORGE L. MILLER: "I wanted the privilege of making a remark or two in respect to our forest here, as I understand the scope of this discussion includes tree-planting on these plains. I would like Mr. Morton's attention to the point I make because I am going to take from his paper. It is in reference to what Mr. Brown, whom I had the pleasure of meeting this spring, a very strong man, had to say about the Black Locust. Now, perhaps, the President of this Convention can put me right, if I am wrong in supposing that this Black Locust was the same as the Locust that we, in the early white settlements in this part of the world, planted as a shade tree. [Mr. Morton assents.] Our friend Brown advocates the Black Locust here as a timber which would be most valuable, and I agree with him; but I had some experience with it, because it was the first planted as a shade tree in this community, and we lost every one of them through the invasion of the borer. I simply rise to make that statement, and want it to go into the proceedings of this meeting. Mr. Brown is an authority. I do not say that this is a tree which should not be planted, but I do say that gentlemen interested should ascertain pretty clearly, if they are going to take up such questions, as to whether the Black Locust should be considered.

"If the experience of others conforms with my own I would not plant it. I never would touch it since. I have

planted the Honey Locust, which I regard as the great tree for posts, and it stands like granite and, fortunately, grows either as hedge or separate tree. It does not grow so rapidly, but it makes better timber for that reason. I have cultivated it in a hedge. As a timber texture the Honey Locust is equal to anything.

"I was, perhaps, the pioneer of testing the Catalpa, that is, the *Speciosa*. It was planted by Robert Douglas in a small plantation out here, and was said to be the most desirable of woods. I have had some experience and I have seen them grown in a small way without cultivation. A young Catalpa tree, and perhaps this is true of every other tree, is not durable for posts or for ties. I would draw the line at the tie size or the post size, owing to the fact that the sap part of this wood is so large a part of the whole."

MR. HENRY MICHELSEN: "In regard to what Dr. Miller said concerning the durability of the Catalpa tree, Secretary Morton and myself both thought that the durability of the timber is very much affected by the time of its being cut. Now I hold this, that all timber of any kind should be cut at the time when the sap is out of the tree—in other words, in the months of late summer and fall. I base my assertion on this, that the worms and borers that attack dead timber are apt to prefer timber that has been cut at the time when the sap is rising. I explain it in this way: that the sap when it rises in the tree has a good deal of saccharine matter in it. This matter is sought after by the worms, and the destruction is much greater in timber that has been cut just at that particular season than later on. I think better results would come by having the timber cut in the early fall than in the early spring."

MR. ADAMS: "There is one thing that always struck me when I was down South in Maryland and Virginia, that they always said that a Chestnut, if cut in summer, lasted twice as long as if cut in winter. If it was cut when in full leaf

it lasted twice as long as at any other time. I believe, as far as my experience goes, most trees last better when cut in full leaf. I think the timber is more durable and will be better cured. This would be my experience. I have used a good deal of Oak that was cut in spring, but it was peeled for curing purposes and it lasted for years and years, but it was perfectly cured. I know if you cut the Juglans, especially the Hickory and Pignut, in spring the chances are you will have them full of borers before the fall of the year. I think that some varieties of trees might preferably be cut in fall, but most when cut in full leaf before the sap begins to return, will give the best results. I think that if cut in either early winter or in full leaf the timber would be more durable."

MR. STEPHENS: "When the Honey Locust is cut in the spring of the year the borers cut it up in a short time."

PROFESSOR BRUNER: "The insect that attacks the Black Locust is the same that attacks the Pignut and Hickory in this part of the country, and he simply transferred his attention to the Black Locust. I am afraid that if we get to planting the Black Locust again the borer would put in his appearance just as much as he did before. Really, no insect attacks a tree when it is in good health, and the Locust had for some other reason become sickened and then the insect transferred his attention to it. The wood of the Hickory and Locust is very much the same as far as texture is concerned. The insect attacks trees that are more or less diseased, owing, perhaps, to some sort of a fermentation of the sap, and the insect likes it. The insect lays its eggs in the bark or trunk, but when the tree is healthy the wound closes up and the egg never hatches; when the tree is not strong the egg hatches before the wound has been healed, and the insect begins to start around the tree and cuts off the flow of sap."

MR. EMORY: "I want to make a motion. I am chairman of a committee that was appointed by the Irrigation Congress with reference to the amalga-

mation of the Forestry Association and Irrigation Congress, and I come to you asking for the appointment of a similar committee on your part. Our committee consists of Mr. Newell, Mr. Michelsen and myself from the Irrigation Congress to urge upon this body the desirability and importance of merging these two institutions into one and the same Association. We believe, for example, that had this Association been called to meet in Cheyenne and the proper time having been given to the consideration of the forestry problem it would have been much better for all parties concerned. We find it difficult to get enough attendance to secure reductions in railway fare. This is an important consideration that would be gained by such a union, and one which is to my mind very important. You cannot talk about the growth of timber without water, nor conservation of water without saving our timber. Now it does seem to me that our interests are so identical that it has been a mistake. We do feel that it is highly desirable that these bodies be brought together, and therefore I move

"That a committee of three be appointed as a conference committee to confer with a similar committee from the Irrigation Congress to agree upon some plan of amalgamation of these two great interests."

#### REMARKS.

MR. NEWELL: "As a member of the American Forestry Association, I should like to urge some steps looking toward a union of interests of these two organizations. I wish to say that, although I have been an officer of the American Forestry Association for some time, and have taken a great interest in the work, I have no pretensions of knowing anything about forestry. I do not know a tree half the time when I see it. I have been drawn into the thing through my interest in water conservation. We cannot talk about irrigation but what the matter of forestry comes up, and of the hundreds of thousands of farmers who are tilling the soil of the western half of



the country by means of irrigation, there is hardly a one but what believes that his interests are directly connected with the preservation of the forests. His interest is not only in a water supply, but also in furnishing a permanent quantity of material for firewood, fence-posts, etc. After a united effort we have succeeded in getting a number of men together in the East to form an American Forestry Association. We have about 1,000 members, but my experience has been that it is exceedingly difficult to bring in the Western men. I have, personally, more acquaintances in the West than in the East, but I have been able to pull in fewer men than in the East. This has crippled our efforts in the past. The Western politicians say this is an Eastern organization and does not know about the matters of the West. In order that this Association may gain strength we must draw in the Western men, and I see no better way than through the irrigation interest."

MR. WHEELER: "Four years ago I addressed a congress at Denver and attempted to show that the forest is Nature's great reservoir. I learned there that it was possible to co operate, and we held joint meetings. Being a member of both Associations, I was much interested in combining the work. I have been connected with the forestry and Association work in Kansas for a number of years, and during my first appointment as Commissioner of Forestry I learned the truth of the assertion that it is impossible for a man to talk about irrigation without forestry, or forestry without getting mixed up with the other subject, and during my first two terms of office I addressed over fifty public meetings, and in every address I combined the two subjects; that is, I branched off to either one or the other, and I think that the two great interests of forestry and irrigation should go hand-in-hand."

The motion was then put and carried unanimously.

The Chairman appointed J. Sterling Morton, Dr. George L. Miller and E. F. Stephens on this committee.

MR. MORTON: "I think the timber of the future is to be grown in the trans-Missouri country, and those States are to furnish the ship timbers of the future. We can grow timber quicker than they can farther East, and I have seen sawlogs coming from land which I knew forty years ago to be bare prairie. I disagree with my friend, the Doctor, as to the durability of our timber. I think that our timber, when cut at the right season and properly handled, is just as durable, in spite of the fact of its more rapid growth, as that raised in the East. I cannot see why a tree that has more nutrition here should be weaker than a tree that has less there, or why the fiber should be different. The tree alluded to by Mr. Emory as the Tamarack, seems to me cannot be the same Tamarack that we know in the East, but is more like the English Walnut. The Tamaracks here, as Governor Furnas knows very well, do nothing at all; even the Larch is rather slow and not long lived, as a rule. This question as to the Hickory and the borers is one of great importance just at this time, because in the last two years these borers have attacked the Shellbark Hickory, which was always exempt up to two or three years ago, and I have a grove which contains some trees which I have watched for more than forty years. They had grown to be very handsome Shellbark Hickory, but are now all dead, and it seems to me that the borer is not like the Pignut borer.

"It seems to me that in this work we have got to make up in its quality what we lack in quantity of membership, and I cannot think of any better thing for this Association to do than to propose a system of legislation by the different States which shall prescribe the method of cutting timber, that is, a system of laws which shall absolutely prevent the leaving of debris so as to make the great fires, which cost us more than the woodman's axe every year, and I think nothing could be better than to appoint a committee, jointly, to draft a law prescribing the manner in which the lumberman shall take care of the 'slash,' as

they call it, because out of the tree tops, twigs and branches which are left come our great fires, which destroy millions of dollars' worth of good timber. All this could be avoided, if there were a penalty for the leaving of debris. Our great Pine-producing States would be millions and millions of dollars better off to-day if they had had some legislation of this sort twenty years ago, and it is not too late to begin it now. I make this as a suggestion, which I think is worthy of your consideration."

MR. MICHELSEN: "I move that this matter be taken under immediate consideration. It is eminently proper that some such action should be taken. I have recently traveled through Wyoming, and have seen the forest fires that have been caused by the most absurd waste of perhaps designing men. I believe that the time is ripe to start an agitation of that subject, and I believe that all the States would be glad to enact legislation, because I am quite satisfied that the Federal Government will stand back of the States in enforcing Federal legislation that is now on the statute books. I happen to know that in the State of Colorado much waste by fires has been stopped by the United States Government providing rangers out of those who are in the employ of the Government, whose duty it is to see that no fires are left where they can do harm, and that people dispose of the tops after they cut the trees. What we are after is not to prevent the cutting of timber for common use, nor do we desire to do away with sawmills or tie-cutting. The forests of this country are large enough to stand that for a good long time to come, provided the fires are prevented. The idea would be that legislation be prepared for next winter. Then I should also suggest that each man here consider himself as a committee to use his personal influence with his fellow citizens in his own State, to get such legislation enacted at the ensuing sessions of the various legislatures."

Moved and seconded that a committee of three be appointed to formulate a

statute adapted to the several States to regulate the cutting of timber in order to prevent the destruction of forests by fire. Motion carried.

MR. MORTON: "I think the general public misconstrue the object of this Association; that they seem to think that we intend to prevent the cutting of any timber at all, while it is really to show how to utilize forests and get the most out of them."

The Chair appointed Henry Michelsen, Prof. S. M. Emory and Mr. William T. Little as members of this committee.

Motion made and seconded that these gentlemen, and two others to be appointed by the Chair, be a committee on resolutions. Motion carried.

The Chair appointed Mr. F. H. Newell and J. Sterling Morton as the other two members of this committee.

The following resolution was submitted by Professor Emory and seconded:

*"Be it resolved by the American Forestry Association, That it endorses the creation by Presidential proclamation of the Middle Creek watershed reserve, the management of the same to be placed by Congressional action in the Montana College of Agriculture to be used in the scientific study of Forestry and Irrigation."*

PROFESSOR EMORY: "The point I want to emphasize is that we are not satisfied in the creation of this reserve to have it handled as other reserves are handled, from the fact that it is a small tract of land upon which we desire to use the very best effort of our Institution along two lines: first, the conservation of this timber, using it as a class room, so to speak, for students in forestry; also for the study of irrigation. This same resolution was adopted by the Irrigation Congress. Congress adjourned last week."

The resolution was unanimously adopted.

The next thing on the program was a paper by Hon. R. W. Furnas, entitled "Progress and Effects of Forest Growing."

After the reading of this paper Mr. E. F. Stephens, of Crete, Neb., read a paper on "Tree-Planting in Nebraska."

Motion made, seconded and carried that we adjourn until to-morrow, the 10th, at 10.00 o'clock.

*September 10th.* Meeting called to order at 10.20. Prof. Lawrence Bruner, of the State University of Nebraska, made an address on "The Relationship of Insects to Forestry."

The next paper was read by Mr. Henry Michelsen, the subject of which was "Forests in their Relation to Irrigation."

DR. MILLER: "I would like to ask if it is practicable or possible for our country as a nation to undertake to reforest the country?"

MR. NEWELL: "This suggests the thought that in the public forest reserves which are now being made and extended, the Government has been criticised for having included so many tracts that the people say has not a tree on it; but they do not look at the fact behind that, that this land which has been reserved was reserved because it was valuable for nothing else—neither agriculture nor mining—and it is capable of producing trees, and this land is the most essential land left at the head-water, which should be preserved in order that the trees may have a chance to grow. As to what course would be feasible has not yet been determined, but we have attempted to make the first step and that is to set it aside. As to reforesting the plains, Congress will do just what the people tell them they must do."

Mr. Wm. T. Little presented the following resolution:

"The greatest body of arable land in the known world, and particularly in the United States, is the eastern Rocky Mountain slope extending from Mexican to British domain. Portions of this section, in addition to being within the sub-humid belt, are swept by winds of such velocity and constancy as to make cereal farming without irrigation an unsatisfactory occupation.

"WHEREAS, this Association believes a proper series of wind-breaks would so regulate surface air currents as to materially reduce evaporation, thereby conserving a precipitation that under those conditions would be ample for grain husbandry: Therefore

"Be it resolved, by this Association that our National Congress should create a commission for the purpose of investigating the feasibility of establishing forest wind-breaks on the plains of New Mexico, Texas, Colorado, Kansas, Wyoming, Nebraska and the two Dakotas."

The resolution was duly seconded and carried.

Professor Emory then read a paper on "The Relation between Forestry and Experiment Stations and Agricultural Colleges."

MR. MORTON: "While I agree perfectly with all of you as to the importance of this question of tree planting and getting the public mind aroused to the vitality of it and the fact that there is a certain dependence between animal and vegetable life, and when the forests are all gone that all animal existence will have ceased likewise, it seems to me that to get this properly before the people and to have it understood before another generation has come and gone, you must get it into the school rooms, and I suggested to Mr. Brown the preparation of primers upon arboriculture, even beginning with the alphabet. Take a tree beginning with 'A' and impart some useful information instead of 'The cat saw a rat,' and that sort of thing. To prove the value of that sort of what the Methodists would call an arousalment of the public mind and getting it into a receptive condition, we have only to look at Arbor Day success. This progressed very slowly until we enlisted the public schools and the teachers, and the moment these were enlisted arboriculture began to grow until now there is much more information abroad as to the value of forests, the conservation of forests, etc. It seems that we are not going to make this a success until the schools are further inter-



ested by primary text-books and then by text-books for mature students, "and I think it is one of the duties of this Association, through each of its members, acting as a committee by himself and for himself, to encourage people to write text-books on arboriculture for children and older students, and when this is brought about we will have begun a real substantial work for forestry."

Dr. Miller offered the following resolution which was adopted unanimously:

"*Resolved*, That this Association approve and fully endorse the plan of Mr. J. P. Brown, of Connorsville, Ind., for creating local corporations along the various lines of railway in this State for the planting of trees in from twenty to forty acre tracts, and we earnestly call upon the railway corporations of the State to lend him their support in carrying out this enterprise."

Dr. Miller made a few remarks in favor of this resolution, stating that it was a very feasible plan and that he thought the railroads could be interested in the work. Motion made and carried that we adjourn until one o'clock.

The afternoon session was called to order at 1.20. The first thing on the program was a paper by Mr. E. D. Wheeler, of Kansas, on "Forestry of Problems of the West."

Mr. A. A. Jackson, of Janesville, Wis., was called upon to make a few remarks. He said he agreed with Mr. Morton in his suggestions about introducing the subject of trees into the schools. "We must have public sentiment upon any great movement to make it a success, and the place to begin the creation of that sentiment is in the schools. I had years ago a neighbor, a most learned judge; he was very fond of trees. He put out along his lot on the street a fine row of trees. A careless neighbor one day tied his horse to one of these trees and the result was that in a very short time the tree was ruined. The judge discovered the man as he was untying his horse and he went for him very vigorously, so vigorously that the owner of the horse said: 'Why, Judge,

I will pay you for the tree.' The Judge said to him, 'You talk about paying me for the tree; it took the Almighty ten years to produce that tree and you talk about paying for it.'

"It seems to me we should go one step further than was suggested by Mr. Morton. Not only should we put the cultivation of trees into literature of the schools, but we should ask them to put out the trees and cultivate them. I want to emphasize as strongly as I can the propriety of this Association in some way introducing into the schools of this country this question of tree culture.

"Another suggestion is that there should go into the public parks of the country every tree that will grow in that climate and in that soil."

Dr. George L. Miller then made a few remarks in honor of Horatio Seymour. He said it was Mr. Seymour who first interested him in trees. "He used to make stump speeches to me, literally stump speeches, sitting on stumps in his own forests, pointing out to me the beauties of the tree and teaching me my first lessons. I refer to the name and fame and great moral worth of Horatio Seymour, and I will say that I have out here a monument to the memory of Horatio Seymour in bronze, and Seymour Park is the name of my home. I wish to pay tribute to this great benefactor of our country."

Mr. Michelsen moved the thanks of the meeting to the president for his ability and kindness in conducting the deliberations of the meeting. Motion was carried unanimously.

Mr. Michelsen moved that we adjourn. Carried.

### The Relation Between Forestry and Experiment Stations and Agricultural Colleges.

By S. M. EMORY.

Nature has found it wise to "*bunch her hits*" in the arrangement of timber and plain (in timber culture).

Her motto has been, "To him that

hath shall be given, and from him that hath not shall be taken away that which he hath."

Consequently we find two great natural divisions, the timbered area and the open regions.

The agricultural man naturally plants himself in locations where there are the least obstacles to the immediate occupation of the soil.

As it happened, 250 years ago, when civilization began on this continent, it was in a comparatively heavily timbered region.

The first step was the erection of log cabins and outhouses; the open space thus made by the removal of timber was utilized as a truck patch, and subsequently fields were literally hewed from the forest.

Naturally such a vast amount of the most laborious of all toil was involved in this struggle of mind with matter, that our forefathers and their immediate descendants were imbued with the idea that trees were foreordained to destruction, and that their continued existence was a bar to agricultural progress.

The next few generations were found migrating to the barrens or oak openings of Ohio and Indiana, and their descendants, in turn, to the fertile prairies and unwooded sections of the mighty Mississippi Valley. When these were pressed to plant a tree they flippantly replied: "My great-grandfather, my grandfather and my father spent their days in destroying timber to live, and I am going to rest from their labors and not give life to that which in turn calls for more labor to remove once it has matured." As a boy my life was largely spent in Mississippi, on the borders of the big Mississippi bottom, where 50 to 70 miles intervened between bluffs. This vast space being covered with the grandest specimens of the hard woods with an occasional belt of majestic Pines or Cypress.

Prior to the war and in the early stages of development in that region, lands were open to entry at 25 cents per acre to any one with cash to buy the same.

Titles having passed from the Govern-

ment to the individuals, contracts were made to deaden these glorious forests, it being the custom for axemen to chop a continuous ring through the bark and sap wood to the heart wood and to allow the murdered victim to stand in its tracks until decay left it a grim skeleton, a memorial to the short-sighted cupidity of man.

All trees over six inches in diameter were thus treated, except the sweet and black Gums.

These, in addition to being girdled, were burned or severely scorched by piling about the stems of the trees sufficient brush and rubbish to effectually destroy bark and cambium layer.

From 4 to 10 years after this occurred it was customary to set fire to the mass of dead wood which by this time had well covered the face of the earth, and to follow up this indiscriminate burning by skilled axemen and log-rollers, whose duty it was to reduce the remaining logs to suitable lengths to be handled, when they would be rolled into vast piles and fired.

These old deadenings were most dangerous localities to life and limb in early spring when the ground was saturated with moisture or when high winds tore the trees up by the roots or stripped from trunk and stem vast limbs which come thundering down to earth, bringing desolation in their path.

By such methods the Southern planter added laboriously 10 to 40 acres per year to his plow land, used to produce cotton and to keep afloat that terrible incubus, *slavery*.

Small wonder that when we consider the antecedents of every native-born American, that at the dawn of the twentieth century we hear the voice of the prophet calling beseechingly, "Spare and waste not," to ears that are closed to every cry, to abstain from forest destruction. How bitter the truth of the old saw, "Experience is a dear school at which fools only learn."

What is the most available method to arouse men to the folly of total deforestation?

The task seems appalling and yet it is not hopeless. Among my valued possessions is a slip of paper  $3\frac{1}{2}$  by 8 inches, bearing the legend, over the signature of Bernard E. Fernow, Sec., that in November, 1877, the subscriber paid \$10.00 for a life membership in this Association.

At present to secure a similar slip would cost five times the money it then did, and it is worth the difference, measuring the Association as it now is by what it then was. I have been a most unworthy member of this grand Association, but do not forget that my heartiest interest has ever existed in your welfare, and the mere fact that until the end of time for me, I will be associated with you, no matter how feeble my interests might be, at least was an assurance that "I loved the brethren" and their working.

Beginning 17 years ago, when the subject of the "*preservation of forests*" was a laughing-stock, this sentiment has spread until we find a membership of nearly one thousand pledged to do their part to right the wrongs that have been perpetrated against unborn millions.

We find upon our statutes strong and positive laws relative to forest preservation. We find 48 million acres of land in eleven States and Territories, around which has been thrown the protecting arm of the Government of the United States, pledged to permit no more senseless sacrifice of the timber interests within the precincts of these vast principalities.

All this has been the grandest of pioneer work. What can now be done by the national institutions charged with agricultural betterment in the United States?

*First.* They can localize public interests.

New York State, always in the forefront in wise measures, has recently added to its already gigantic curriculum a college of forestry, securing as its head the man who has done more for the cause in the United States than all other combined agencies.

The example of New York should be copied by every State in the Union. Minnesota is doing much in this line. Montana had weekly parties of agricultural college students in the mountains all through the past winter college term, studying the life history of her forests. The work has been confined, not to college work alone, but Capt. George P. Ahern of the United States of America, who, in addition to his duties as instructor in military tactics has undertaken the Professorship of Forestry, has given several lectures on forestry in leading cities of the State, using the stereopticon, that potent aid in bringing the subject home to the hearers. Without fear or favor he has handled this subject, showing up the criminal, wasteful policy of the strong local corporations, who have been literally gutting the mountains for private gain. Steps are pending by which, if the consent of the Government can be gained, a reservation embracing 55 square miles, in the Gallatin Mountains, will be reserved on which it is proposed to call into play the most approved methods of forest and water conservation. The twain are inseparable and will be there handled together. The Rocky Mountain ranges might be searched unavailingly for a better natural reserve for forest work than that of Middle Creek.

This stream is a principal tributary to West Gallatin River, and derives its name from its geographical location, lying as it does between Bozeman Creek on the east and Cottonwood on the west. It is the largest of the three, carrying an average of water during the year between April and November of 150 cubic feet per second, with a maximum of 483 cubic feet in June, 1898. The point of exit from the mountains is seven miles by wagon road from the station, and it is at this point that it is proposed to have the reserve begin. From this point it is 18 miles to the forks of the stream, its general course being southeast to northwest and phenomenally straight. For six miles of this distance it flows through a canyon through which and as far as the forks a good wagon

road has been constructed at the point of exit from the mountain.

At the mouth of the canyon the stream is but a little more than a mile from the sister streams on either side; between these streams and Middle Creek are high, precipitous divides, perhaps 1,500 feet above the stream's level; these open out from Middle Creek, as one travels up stream, widening from  $1\frac{1}{2}$  to 2 miles at the entrance to the mountains to from 5 to 7 miles at the forks. A considerable area of country lies between the forks, as these diverge to a distance of 4 miles.

These head in the Gallatin range of mountains (in which are peaks 8,000 to 9,000 feet high), within a half mile of the divide between the Gallatin and Yellowstone.

In this territory of some 55 square miles with not an adverse claimant, there are all types of soil and location. In parts a light sandy, black muck, heavy clay, upland parks and green lush meadows. The silva of the region has not yet been closely studied. We know, however, in a general way, there are of conifers, Pines, Cedars, Firs and Spruces, and of deciduous trees, the Cottonwood, Willows, Maples, Cherry, Alder.

There is sufficient timber to warrant the belief that by careful handling it can be made a self-supporting proposition. At the forks, some 18 miles from the north of the canyon, is a natural location for a dam, in which can be impounded excess early waters, useful in the study of irrigation and to drive logs down stream. The proper handling of this property will call for roads, bridges, quarters for ranges, guards and workmen for fire-breaks, reservoirs, snow-fences to collect and conserve the winter snows.

This reserve being acquired it will then be in order, first, to plat the tract. It is unsurveyed.

Next to cruise the mountains, and by counting and scaling to arrive at a tangible idea as to the amount of timber upon the ground; next to estimate ripe

timber, to remove it without loss to other growing timber.

Permanent camps will be established on the reserve to be occupied by students engaged in surveying the land.

Here is an educational way the Montana youth may be brought into touch with the most potent factor of civilization. Nor will the work be confined to the actual exploiting of timber in its native habitat. Promising specimens of the mountain sides will be transplanted to the naked bench and valley lands, and the farmer will be taught the best methods for circumventing the transfer of the grand conifers to his doorstep. He will be taught the proper time to secure seeds, the art of successfully sowing and growing, of their cultivation, their pruning, and in fact to be able to transform the bleak, wind-swept plains to sheltered, peaceful valleys, where life and property will become more valuable for its new environment.

In conjunction with the Department of Agriculture, our station is planting experiment timber plats; these will fulfill the dual purposes of throwing light upon the domestication and cultivation of forest trees, and of supplying the object lesson to the student of silviculture.

In the building devoted to agriculture at the Trans-Mississippi Exposition is to be seen in the Montana exhibit a partial collection from Montana forests. This is, in large part, also the work of Captain Ahern, to whom was furnished a small sum of money from the State appropriation. He was badly handicapped, not only for funds, but for time as well, as he was allowed only 60 days in which to secure the specimens. These were prepared for exhibit in the shops of the Montana Agricultural College under his direction.

It is high time that the people were awakened to a full knowledge of the necessity of the conservation of forest and that the time is not far distant when the greatest loss will eventuate from their destruction. Not only should the

present devastation, be checked, but repairment should be made in regions where the greatest losses have occurred.

In our experience we do not note that people are willful, but are simply indifferent. They note in the daily press subject matter of the keenest interest to them; they read it and comprehend it after a fashion, but it must be brought home to them in the keenest, most incisive manner.

The Montana Station, with the exception of its general office and chemical buildings, has not a building upon it, other than log structures.

Some of you have seen them and have flattered us by pronouncing them neat, durable, comfortable, and we know they are economical.

This has been done with a purpose, to teach the Montana farmer that any reasonably industrious, skillful man with common tools can provide a comfortable, tasty, attractive home, without paying tribute to the lumber baron.

The suggestion is being kindly received, and many such buildings are being built in our State.

Cuts of our farm cottage with a description have been printed in a publication with a quarter million readers, and letters of inquiry have come from many States concerning its construction.

Do you not suppose that to the family, comfortably housed inside walls of six-inch timber, be they conifer or deciduous, both being equally serviceable in house construction, that the lodge pole Pine, the Fir or the Poplar grove does not possess a new interest, and have not their eyes been opened to their value, and the importance of protecting them from the ruthless axe or the devastating fires?

The above are some of the ways in which the stations and colleges may serve the cause of forestry.

Willing hands can always find the way to profitable labor, and the institution which desires to help in this grand work can easily find the open way.

### Forestry vs. Tree-Planting.

By B. E. FERNOW,  
*Director N. Y. State College of Forestry.*

The treelessness of the prairie and plains country naturally suggested the planting of trees to a people who had learned in more favored sections the comfort, the beauty and the value of an arborescent growth. The wind-break effect of a shelter belt, the shade of a grove were soon appreciated by the early settler, and finally, the hope of securing at least firewood supplies, if not working timber, induced him to resort to the unfamiliar occupation of planting groves.

One would think that the incentive to secure these well-known comforts would have been sufficient to stimulate every newcomer to do his share in improving the landscape and the local climate around his house, barn and fields by tree-planting, but so sluggish is human nature that some additional stimulus seemed necessary. The Federal Government, with a most liberal hand, gave away thousands of acres of land to induce settlers to improve their homes by timber-planting, and private effort added the stimulus of the emotions, on which Arbor Day is founded.

Yet even so, with a quarter century or more of effort, there is still need, it seems, of making tree-planting attractive in the plains. I do not propose to discuss the reasons: they are mainly expense, frequent failure on account of unfavorable climate, and ignorance as to proper procedure, and finally the discouragement which comes from a non-fulfillment of mistaken expectations, which the claims of the stimulators had aroused.

The tree-planting movement of the Western prairie and plains States, however good it has been for those States in stimulating arboriculture, has done much harm to the forestry movement in the Eastern States, where some good but unenlightened enthusiasts confounded the objects, aims and methods of arboriculture in the plains with the objects, aims and methods of forestry in the forested



States. The problems in these States are entirely different and the methods of forestry are entirely different from the methods of arboriculture as practiced in the treeless plains.

Here all planting is done for comfort, rather than for material results. The man who expects to do much more than raise firewood, such as the Eastern States will have always more than enough of even under the worst mismanagement, has not studied the relations of tree-growth to climate. Even if he should succeed in growing small dimension material for certain purposes, he may never expect to enter the great lumber market, whose demands are for saw-logs to the amount of a half-billion dollars or so a year. If there were no other reasons the expense would forbid.

Forests—*lumber forests*—grow and will always grow, in humid regions, and forestry—the rational management of forests for wood supplies—will be practiced in those regions and on those soils which nature has best fitted to produce wood-crops, namely, the poor soils in the humid regions, leaving the good soils to agriculture.

But forestry is not tree-planting, although occasionally the forester is forced to use the planting tool. The axe is the forester's tool, just as it is the tool of the lumberman. It is by cutting trees that the forest is not only being utilized but preserved, providing the cutting is done properly according to the principles which forestry teaches. Just as mankind preserves itself by the constant renewal in the young, so the forest is preserved by the removal of the old trees grown to useful size and the attendant renewal of the young crop.

Where, to be sure, the lumberman's injudicious use of the axe and the fire following his operations have given over the soil to the weeds in tree-form, cutting alone may not always remedy the conditions; nevertheless tree-planting, expensive and hazardous, is the *ultima ratio* of the forester.

The tree-planters of the plains have for a long time clouded the issues of the

forestry movement in the East and West by their gospel of arboriculture and Arbor Days; they have antagonized the lumbermen, the owners of our woodlands, without whose work they could not have settled the treeless plains and built their houses and barns, and thus they have retarded, unwittingly, to be sure, the development of forestry.

The times are changing; owners of woodlands begin to see that forestry is not tree-planting but tree-cutting, and that when the axe is laid on the first tree forestry must begin, not when the tree is cut.

Not only are now several firms of lumbermen employing foresters to direct their cutting of trees, but the State of New York has established a school, where the art of forestry may be studied in all its branches.

Here rational tree-cutting as well as rational tree-planting, reforestation of denuded hill, as well as grove-planting in the prairie and plain, and the difference between the two, will be taught.

### The Axe and the Accident.

By J. B. THOBURN.

The heroic action of Engineer William G. Westall, who rode to his death in the accident on the South Park line last Sunday that he might save the freight of humanity on the train behind him, appeals to our admiration of all that is high and noble. Words cannot express the emotion aroused by the contemplation of such a character. Yet mingled with our admiration of his heroism and our sympathy for his family there must be a feeling of deep concern to think that his death was made necessary by the rapacity, the indifference and the vandalism of his fellow men. The angry torrents piled masses of gravel and sand and silt upon the railway track, thus causing the wreck. They had rushed unimpeded down a mountain slope upon whose face the stumps of bygone forests were the mute witnesses to the fact that the woodman's axe and the fire which followed had destroyed the provision which nature

had made to prevent this very flood. If words fail us in describing our regard for the hero, so also must words fail us in the expression of our indignation of the action of those who, for the sake of present gain, are willing to sacrifice the welfare, the property and even the lives of their fellows.

The question of forest preservation is one of national concern, and as such it should interest every citizen. Our nation has just been the instrument in the hands of Providence for the chastisement of a

people whose moral, physical and political degeneration is coincident with the forest destruction which rendered barren so much of her land. Let us not be slow in learning the lessons so forcibly and clearly presented to us. The function of the mountain forests is to protect the water supply and prevent the occurrence of sudden and disastrous floods. Their preservation is not alone for the profit and protection of present interests but it is also a duty clearly due to posterity.  
—*Rocky Mountain News.*

---



